

Making the world appear

Essay

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Introduction

Becoming awake, opening the eyes the world seems to be present in front of the senses. The following brief contributions will stress that the organism on the contrary is making, in the sense of projecting this world scene from out the particularities of the body. These will sketch out the phenomenal scene by this practice at the same time border the reach of what can rise as appearance.

However attention will be given to characteristics shared with species most akin, the focus will be on the effects of human characteristics.

The first text with “On the approach connecting to reality” as title, questions which perspective could be considered to be most appropriate for depicting reality. It will also point out the abilities shared with the species most akin. Taking into account the particularities of the body they instantiate, all species in principle constitute a world in the same way. The appearance will be different only because the abilities offered by the respective bodies will be different. Some will for instance have trichromatic and stereoscopic vision others antennas to grope around but in the end all will bring forth a construct.

The second contribution will focus on the abilities opened by the specificities of the hands, a factor of decisive importance in case of the human. It will actually provide the cognitive perspective of that species a particular twist.

The third chapter will further elaborate on this. Because even in the case embodiment is getting fully accepted, the impact of the abilities of the hands and the “logic” of manipulation will more than often not be appreciated as a reality defining factor.

Others also recognize the importance of manipulation in the development of bringing forth intelligence. But missing concrete steps and operations I often remain dissatisfied. To illustrate what is meant “The grammar of action in human behaviour and evolution” by Dietrich Stout, Thierry Chaminade, Andreas Thomik, Jan Apel and Aldo Faisal dating from 2018 will be explored. An addendum will briefly offer clarification on the importance of narratives, however not the central subject in this contribution. A schematic overview rounds up.

On the proper perspective to “reality”

Abstract

What refers to reality, the approach of a particle physicist or that of an anthropologist? As a first step in a discussion the dominance of brain causality will be exchanged for a stress on functionality. Next, reality will be treated as a quality not as an ontological category. Then central principles underpinning the perspective will be listed. First comes viability referring to the fitness of the phenotype in negotiating the burdens of a changing environment. Thereby the type of body opening particular abilities at the same time setting the limits is of cardinal importance. Through inheritance, education and practice the body is charged with experience. It comes down to the accumulation of history in turn organizing the understanding of upcoming changes. Meaning is getting mined from the past and projected on the future. Next the focus is on measuring the now-moment, the subjective experience of existing. These three factors provide the platform from which it is all happening and most important, is getting understood. Hooking up to that is, that following Darwin’s theory of evolution all species are related and the more akin the stronger the similarities. This provides a solid base for an investigation into the development in skills characterizing the human.

The contamination with meanings embedded in particular historical contexts requires a profound insight in history hence allowing making abstraction.

The conclusion is that each approach has its connecting level. For understanding the human condition the level shared with the closest cousins i.e. action in the public arena, seems to be most appropriate.

For the sake of completeness a postscript will characterize the evolutionary added staging setting the human apart.

The problem

Cosmology focuses on the extremely large. Physics dealing with elementary particles focuses on the extremely small. In that context symmetry of time is accepted. The laws function equally correct in present, past and future.

Humans and for that matter all organisms function on the level where phenotypes interact in the public arena. The lived time has only one moment and one direction; it is getting experienced as asymmetric.

Which should be considered the basic level? Which could be called the “natural” one? These are the questions to be discussed in the following paragraphs.

Brain centrism as mainstream approach

This subject is not directly connected to the question at stake but as a mainstream conviction it is of tacit influence on the thinking about it, as the brain is more than often considered to be the causal centre of moods, intentions and behaviour and by this the level of understanding, the level onto which it all happens hence a suitable candidate for claiming the function as level of entry.

Question is in how far is this perspective justified?

What is the function of the brain or the workings of the neural tissue?

In mainstream thinking there are two levels alas often mingled without a clear distinction. On the one hand there is neural technique in the broadest sense encompassing neuronal surgery. The focus lies on technical interventions provoking observable effects. Think of the work of Wilder Penfield, Benjamin Libett and the group focussing on the workings of motor neurons, mirror neurons in particular. Some of the scholars in all this do not limit themselves and engage in a second level by adding interpretations to the observed results. That is the case for Libett engaging in considerations on consciousness and Michael Arbib suggesting that the observed workings of mirror neurons might be the substrate for the coming into being of the faculty of language.

Not seldom the reputation of the scholar in question plays an important role. The underlying idea is that scholar x has been involved in successful and maybe spectacular research. This seems in some natural way to provoke the conclusion that whatever he has on offer will be of same standard. On the one hand Penrose for instance did brilliant work in cosmology on singularities and on the other he later attributed the origin of consciousness to – in his own words - the workings of still to find quantum gravitation fields in the neuronal tissue. Something similar is the case with Crick, one of the two scientists “making use” of pictures realised by Rosalind Franklin in order to construe the model of the double helix. After having been granted the Noble Prize, Franklin got neglected by the sports; he engaged wit enthusiasm in the study of consciousness suggesting that a resonant 40Hz vibration would have been of importance in the whole matter.

Concluding that it is a cautious practice to accept interpretations offered by experts in experimentation.

But apart of that type of bias interpretations from the past remain slumbering. It is hard to find someone still defending Cartesian dualism in public. But the accompanying register of concepts remains undiminished in use by this leaving its marks in the experience. Mind and mental abilities are still distinguished from the body as if it were different instances with the stress on "instances". Besides that there is the shift in the direction of the central importance of the brain, a shift dating from the 17th century.¹ In itself there is nothing wrong with that. Man could not be thought of without the workings of the neural tissue.² The problem is that it does not end there as more has been attributed to it. The brain seems more like a fountain from which almost magical abilities well up. This is even the case for the physicist reducing all what is to the form of matter. Even in these cases there remain abilities or dimensions not wholly reducible to matter.³

In the approach preferred in this text the neural tissue takes a constitutive part in the whole of the dynamic of the living organism. It is part of it, a necessary condition even, but not the essence determining the human condition. It is rather to be understood as a node. Noble and Davidson observe rightfully "(...) practices recruit the structures of the brain rather than being determined by them." (1996:226)

There are situational and contextual practices changing part of the tissue into function regions, in the long run providing in principle omni-functional neural areas with specificity (Keijzer et al. 2013). Neural plasticity testifies of the fact that this suggestion is not without ground.

In short, against the metaphor of the brain as an Alladin's lamp from which after fierce rubbing all kinds of wondrous abilities escape another depiction takes form, that of an acting organism in an instable environment provoking answering behaviour whereby the activity of the brain supplies an essential contribution.

The aim was to draw the attention to the fact that different perspectives got intermingled as if they all belonged to the same order. That kind of bias does not imply that one perspective would hold more correspondence to reality than any other. The importance is that each type of question connects to an order which is most suitable considering the circumstances or the goal set.

Looking for factors basic to the development of stone tools on the level of mutations is not the best the best way to proceed. To that end it seems more favourable to focus on changes in the environment or broader the ecology, which were influential in determining which species

¹ For the historical shift: R.L. Martensen, 2004, *The Brain Takes Shape*. Oxford University Press.

² Taken to the extreme unveils the true appearance of brain-centrism "remove the brain and cognition is deleted, ergo cognition is situated in the brain".

³ Qualia has been mentioned before under "Authentic features versus features with a historic background".

would survive and which not. For example has speech developed as a consequence of a flawed copying on the level of genetics or did it come into being under the pressure of a practice fitting the changed ecological conditions?

This does of course not exclude that a malfunction in the production of speech sounds could not be remedied by an analytic and mechanic intervention. But that is not the point here. The question central in this contribution is: how to produce typical human skills in the immediate circle of existence?

The critique formulated on brain-centrism should be understood in the right way. A distinction should be made between researches into the technical dimension on the one hand and the basic assumptions on the position and the role of the brain into the framework of understanding what it is to be human on the other hand. On the first one can think of the work done at the Bernstein Center for Computational Neuroscience in Berlin or of the Brain-gate project in which John Donoghue plays an important role. The critique does not discredit that technical approach in any way, on the contrary. The critique is only aimed at the meaning giving *interpretation* of the role of the brain in what it is to be human. Of course the technicians mentioned will quite probably follow the brain-centric interpretation moreover precisely that inclination might have been the factor convincing them to initiate the research they conduct. That might even be a strange twist of fate. Nevertheless this does not eliminate the usefulness of unveiling the historical biases and reorienting the focus onto an alternative version

Now the role of the brain has been put in context, the moment has come to turn to some considerations relevant in answering the questions asked.

First consideration

Intuitively the answer to the question formulated under “problem” would - most appealing at least to me - point to the phenotype acting and reacting onto the fluctuations in the environment. But on the other hand it is impossible to neglect the opinion of the physicist that the elementary particles constitute reality. Impossible because his knowledge translated in manipulation can affect conditions of life on the level of the phenomenon. Electromagnetic radiation can be used to destroy cancer-cells and the survivors of Hiroshima know everything about the effects of fiddling with elementary particles. Moreover these manipulations connect to the extreme. Travelling into cosmic space presumes theories on the extremely large as frame of reference, the travelling itself falling back on the manipulation of the very small.

So, what should be taken as the basic level, often referred to as *the* reality?

Reality as qualification

First of all reality as label has to be understood against the historical context the very idea got introduced. That can be traced back to the Greeks looking for the essence of “that what – invariable – is”. However, as explained in other contributions this is a particular scenario introducing an ultimate instance. Mind the word *introducing*. It boils down to an idea introduced in a particular historical setting and does not in itself guarantee that there such instance somewhere occurring. In other words, reality is a qualification taken and by this relative to the reasons for doing so. The Greeks had there reasons alas as a remnant still tacitly alive to this day, moreover the origin has been lost in the mist of time.

In short, reality is nothing but a qualification with no referent out there somewhere; the latter only existing in thought models.

But still, to what level could a qualification like this become attributed?

Second consideration

Recall the question: what level is most apt to be appreciated as basic, maybe even labelled as reality?

Taking three conditions into account might be a good start.

As first comes biology manifesting itself as the endeavour to survive. The second is the particular way the human gives execution to the negotiation of the world. As explained earlier in “On the human condition” (sub Realizing human cognition in the cross-section of life, part on alienation) the skill of language underpinned by mediated manipulation is not raising a condition on top of the original form of negotiation but modifies that form; it brings forth a transformation into another mode. (I will come back to that later) In that sense education into that skill does not add a supplementary layer; it rather transforms the human organism, more precisely it transforms the way he is negotiating the environment, by extension the world. From that perspective mentioning a condition of alienation as some do is a flagrant mistake. This way of negotiating the world collapses with the condition of being human. If it would be possible to make that undone, it would reduce the human into an animal not different of the species most akin. The human did not get an extra layer, he changed.

The third condition comes down to applying that mode and conceive an imaginative realm at the same time an extension in reach as in thinking about an event in the past on another location, and also an extension in possibilities as in developing models.

The second condition goes with the third in that sense that the second refers to a form of action while the third has more to do with the effect rendered.

This already sketches out a particular frame of reference.

That condition as background allows inferring that an absolute neutral and objective narrative, the only true version with capital TV, is a fiction. Any version is a version from out a particular goal, appreciated values, fostered ideas.

My personal goal is trying to gain clarity in the evolution of an apelike creature in becoming human i.e. being able to bring forth and implement skills and abilities considered to characterize what it is to be human. Moreover and even of more importance trying to fathom the conditions and actions needed to bring forth the skills mentioned.

This is of course not the goal of this brief contribution. Here I want to shed light on the basic views providing ground allowing to set hesitant and cautious steps in the direction of tentative answers.

Some views giving form to basic a framework, my reality

The **first** and probably the most basic of assumptions follows from the theory of evolution, the survival of the fittest implying that the **phenotype has to prove viability in real life situations**. It implies not only that the form and the abilities of the body are crucial but also that behaviour in the perceivable environment is the scene of decisive importance. Evolution has not prepared the human to perceive atoms, quantum fields nor mathematical realms but conditions interlocking in a direct way to the sensitivities and the abilities of the body. This provides a strong indication about the level to be considered of primary importance.

Short, it indicates the very first level of entry being body enabled action in the scene prone to perception. That is where *life* before everything else happens. There is yet another weighty argument playing. It is the level shared with all other species, moreover the only level which can be assumed to exist for other species.

The second assumption deals with the primary motives providing meaning on the lowest level. Being the same for any creature it is not a criterion allowing discrimination between abilities of different species. The communality should anyway be kept in mind as the omnipresent meaning giving motor. The organism, any organism is not an idle instance; it is driven in a meaningful way from the very beginning. It would not be wrong to say that life and meaning are two different terms referring to the same.⁴

Implied in the first assumption is yet another about the importance of the characteristics of the body, in short **embodiment**. Reading academic articles as well as listening to the common

⁴ In that sense the question into the meaning of life is quite weird. It expresses a duality between something existing in its own right on the one hand which on the other is looking for meaning as if it is something absent altogether. That question is on sensible from the condition where composing discourses or scenarios became possible. To that end imaginative displacement in space and time is a necessary condition.

parlance exposes that the role of the body as a definite and all determining filter seems to escape the general attention. It makes it look as if the world is fully transparent, the human eye in principle having access to every corner and dimension of the world and of life. This while it is obvious that the instrument determines what can become captured. The body as a bundle of abilities unveils what can be perceived. It opens the windows at the same time defining in the sense of restricting the reach, the dimensions, the qualities rendered. The latter fact is more than often neglected as if transparency is endless and all permeating. The latter is a stance of unquestioned implicit realism made explicit by the Greeks from then on questioned or problematized and becoming the Red Thread through the history of Western thought.

The counter argument that complex tools and highly sophisticated instrument open and widen the perspective in unexpected ways misses the point. These realisations are finding development within the system or the logic of the bodily abilities. They are all extensions within the same dynamic structural definition. The microscope improves the reach of the human eye. It does not shatter that border in the sense that it would get in touch with all what is "out there".

It can come hard to catch that there is actually not such thing as an "out there". What we perceive is a finite construction by the senses and the motor abilities. It is possible to stretch the reach but as a construction and nothing but a construction is always will remain finite and obeying the characteristics of the sensitivities. The noumenon referred to by Kant does not point into the direction of something out there. The term means "that what only can be thought". And indeed we can think that there is something out there, our conclusion that there is might even be sound, but it does not escape its nature: it is a conclusion, a thought and nothing else but that.

Short, the abilities opened by the body impose at the same time limit in a definite way, even if these abilities are expanded by technical contraptions.

As an anecdote on the character of the noumenon, I once witnessed a panel discussion where Marvin Minsky mentioned the following. The human as the product of evolution is the result of the accumulation of successes but, and then smiled in the prospect of offering a surprise no one yet thought about, continuing with "but everyone seems to forget all the mistakes having occurred in the past which did not substantiate in the flesh". (These were not his exact words but it came down to this message) It however seems to escape this eminent scholar that no doubt there will have been more mistakes than successes but that this finding only can be thought of, it is a product of our thinking. It is a supposition more than probably true but a supposition nonetheless.

Drawing the attention to embodiment goes well with another characteristic, the **bodily abilities as sediments from history**. It is an aspect which is rarely mentioned but which is in such a dominant way present. Using an analogy will try to clarify this condition.

Take a loaf of bread. It is present in front of me and it holds the promise to feed me. That is its meaning which we experience as a moment in the actuality. It is there and that is what it is.

However it could not have been present without a handful of seeds distributed over the surface of a field which would hold it and provide support. It is brought to grow by the presence of fertilizers and manure, by the rain occasionally falling and the much needed light of the sun all of these constituents spread over a certain span of time. It got mowed, stored and processed by a farmer thus accumulating and instantiating his labour which in turn has its own course of history. The grain became traded and after passing a few stages ended up in the workshop of a baker who processed it again into dough which became delivered to the immense heat of the oven. The product then got displayed and after a while sold to me as customer ending up on my breakfast table. The whole of this history is instantiated in the loaf. It could not have been there without that history; moreover it is precisely that history and that history alone which radiates and projects its meaning.

Let us turn back to an organism, the human in particular.

The human is *not* provided with a magic ray peering into a fully transparent environment and collecting meaning from what it perceives. The human from the moment of conception accumulates and embodies the history of its species. It does not carry the history of cattle, neither of birds however to some degree it does. But let us focus on it emanating, embodying and instantiating the evolutionary history of the species. It will only be able to act, to move, the mate like a human. After birth it will be immersed in and permeated by a particular way of understanding and of doing things, it will be encultured and convert the history of that culture into practice, the bushman different from the inhabitant of Paris, the latter different again from a Japanese. The dimension of personal undergone events constituting a personal history comes on top of that. All these layers forged into one understanding, one specific thread of narration will be the source from out which all meaning of what is becoming perceived is brought forth. In that sense, meaning is not something distilled from what can grasped by the sensitivities of the body mentioned before. The pen inviting to write as Heidegger mentioned as a catching illustration can only be seen this way because there is a hand fit for that purpose. For the hoof of a goat it has not meaning at all. The meaning is getting attributed or projected out from the corpus of history onto what perception can grasp. And even that is selected out by history. The bushman will see food and the presence of water in places which will remain unknown for the inhabitant of Paris. For the more interested reader, this particular stress on the historical trajectory as a constituent of meaning is also discussed in the work of Maturana and Varela, and in the publications of scholars like Beau Lotto and Daniel Hoffman however these last ones remain acknowledging a reality somewhere out there. They seem not to discern the reference to something really existing out there and that reference being no more than a thought. Putting that aside the remaining psychological explanation is quite fruitful.

The two dimensions, embodiment and the consolidated history are the cornerstones of constructivism. There is no miraculous way to escape this condition. Moreover why should there be? The idea of an objective reality in principle knowable to an independent observer is a fiction, a historical remnant from prior interpretations. The prototypical defendant of Western culture will with a certain victorious flavour declare that with the Greek philosophers of nature mythical explanations have been left behind. I hasten to add "and exchanged for a new one". Humans are however what they are: embodied creatures of which the interpretation of the Umwelt got formed under the influence of history.

The situation is even more serious than already mentioned. We have taken embodiment and history into account. There is a third factor of cardinal importance: the period referred in the condition of experience, the **nunc stans** so called in the circle of mystics, the sense of being present. But whatever it is called it is boiling down to the experience of duration of being alive, the lived presence. Research has shown that perception and action function optimally in chunks of three seconds. So far for what might be called the stretch of time. But there is also a qualitative dimension, an experience of duration playing a defining role in what is getting perceived. This has to do with in case of the visual, the number of images captured and processed in a certain span of time, say one second. For the human that is about twenty-five. For the fly this number has to be multiplied by seven. The consequence is that time for a fly "flows" slower; in concrete terms the fly perceives the human hand moving in slow motion. So far for some anecdotic data, the burning question however is: what is the relevance? The awareness of being alive is approximately three seconds! The whole content is alive in that period: the moods and thoughts are experienced in there. We remember about the past and think of the future from within these three seconds. Meaning, there is actually no past or future but nothing else than a thinking within that moment. Accidentally the direction of past and future, behind or in front of, is arbitrary in the sense of culturally determined and related to the direction used in reading, European from left to right, Hebrew in the other direction, hence the arrow of time...

A rather simple critique might be "are we humans living in a series of 3 second chunks then?" No, not exactly. An analogy with the process of seeing could help. Having two eyes the one positioned next to the other, the human visual field covers circa 140° horizontally while 80° vertically, seemingly offering a quite a nice window. At least that is the impression because the actual surface seen sharply is not larger than 3°. Compared to 140 and 80, it is quite a considerable difference to say the least. However, that 3° spot is jumping around - the so called saccadic movement - at a rate of five a second. That is one determining element. The other consists of providing data on the basis of what has been accumulated during the history of the

organism. As soon as a minimum of data is sufficient to activate recognition, that will function by filling in the gaps. The end result is a rather clear depiction not at all characterized by missing parts neither by a jerky sequence of images.

This representation as a matter of fact part of being alive can be generalized to a broader and encompassing modal spectrum. Based on the direct input of raw data and complemented by elements of recognition – residues from past experiences, the actual impression forms and transforms according to changes in the processes mentioned. It is tempting to say that the experience being 3 seconds long as measured by Pöppel glides from one sequence to another as if in following a line in time.⁵ But that would suggest a trajectory in time while it would be more accurate to consider it as a transformation within a frame of existence of which the duration is defined by awareness and for the human species complemented by consciousness. The latter underpinned by the manipulations of remembered presents of all kinds taking place in the only frame of reference it can take place: Pöppel's 3 seconds.

As a note in the margin, I have David Z. Albert, professor in philosophy and doctor in theoretical physics, once express that with Newton a spatialization of time set in. However I would have referred already to Galileo for that matter, this is a most interesting observation. As in the very long period preceding this point of view, time was considered circular and not as much linear and symmetric. These are actually vectors going very well with Newtonian mechanics. Being spatialized what happened after Newton was a redefinition of time as part of a larger whole. This perspective permeated daily life and common parlance. People experience an arrow of time as a line as if the past would indeed be present somewhere behind them and time comes flowing, after all no more than a metaphor. But on closer inspection, that depiction of an arrow is not a necessity. I for one feel quite comfortable without it, considering a reference to events happened as memories or plans made as projections or feelings of expectation. (on David Albert, YouTube, World Science Festival, Time since Einstein, on 40 minutes)

What has been explained here is that trivial that it escapes awareness. But when focussed and becoming conscious of it, it may come as stunning.

There is one more observation to make. Pöppel's measurements suggest a duration collapsing with life itself. It has also been said that the awareness of existence is to be understood as a transformation, and not as a gliding movement on a trajectory. But even taken all this into

⁵ Ernst Pöppel, German psychologist and neuroscientist, reports on experimental evidence on the subjects of temporal order threshold, choice reaction time, single cell activities, evoked responses in neural populations and latency distributions of oculomotor responses etc. He observed that it takes from tens of milliseconds to a max of two to three seconds allowing him to conclude a pragmatic definition of the states of being conscious or as he calls it the subjective presence or what I would call the duration of the now-moment and probably akin to the block space-time universe from an Einsteinian approach. Pöppel E. , 2009, Pre-semantically defined temporal windows for cognitive processing. *Philosophical Transaction of the Royal Society B*, 364, 1887-1896.

account there is yet something else escaping awareness. As an illustration take a line of people waiting at a bus stop. We consider this a line at the same time neglecting the spaces amongst the individuals. Looking at a movie of a running dog, we consider the movement being one and fluent. However the movie is composed of separate frames or static photographs. The separation escapes the attention, not only physiologically (the 25 frame rate corresponding to what is humanly possible) but watching the movie the gaps are not even considered to exist. Something similar is most probably also happening in what is discussed. We experience the now-moment as infinite only disrupted by sleep. But it is more than likely that the experience of now is caught by interruptions, moments of existential blindness which escape reporting because of the lack of awareness. Is that relevant for the discussion? Probably not in a direct way but it is useful to take notice of this accidental possibility by this undermining the illusion of a continuous flow of time even more.

Completing this condition, **space** refers to the realm rising from the susceptibility of the senses and the reach of the motor capabilities. This type of space is organic, vivid and asymmetric and has no similarity with the rigid and rather sterile Newtonian spatial frame of reference.

Summarizing, embodiment opens abilities at the same time defining their limits; the “body” is consolidated history projecting meaning and all this in a span of no more than three seconds. It took less than thirty words to write that down but it is a condition which deserves becoming deeply aware of.

However closer to the skin it is very different from the common accepted Western appreciation whereby the human is viewed as an encapsulated centre of command deciding voluntarily on the basis of the workings of the brain, in a relation of confrontation with the world existing objectively over there, independent of and in principle accessible to the observer, characterized by a space extending in all directions and a seeming endless flow of time. This view is rooted on the interplay of an unquestioned experience which aptly could be labelled naive realism and historical as well as local convictions, both going hand in hand, mutually determining each other.

Take for example the religious believer organising comportment on the basis of what he believes, not on the possibilities opened by the faculty of seeing. The same goes for other forms of societal organisation, politics etc. An economy based on the principles of a free market is only two centuries old or rather young, but it is by many accepted as a universal and timeless condition best matching the human nature.

It does not eliminate the fact that reduced to the bare bone, ultimately we fall back on embodiment, history and the three seconds mentioned.

The relevance of this approach is that it contributes to the importance of the level of entry, the level from where the hominid began to negotiate the world differently and by this transforming into a human.

History in a somewhat different context leads to another point of interest – really interesting as a matter of fact at the same time underpinning a methodological point of view.

Having knowledge about the **historical turns and twists** can help to understand how particular convictions grounded in a specific *Zeitgeist* can veil a clear view on a problem. It allows to make abstraction and to **bracket** an interpretation in order to stay with the core of the problem. I took me ages to understand what particular twist for instance Nietzsche and Heidegger were talking about when referring to the Greek origin of Western thought. It was experienced as a conundrum in the same sense quantum mechanics feels today, incomprehensible and escaping every attempt to get a hold of it. After struggling with textbooks on the history of the Greeks for the period around the 5th/6th century BCE as offered by Snell, Onians, Ebeling, Gering, DeLey and the like, the breakthrough came with the insights presented by Clagett and by Lloyd.⁶ It allowed distancing from the storyline and focus on the function of language. In the earliest period language instantiated an articulation of existence, more particular the articulation of an action, in short it came down to language as an action itself. In the period mentioned the function shifted in the direction of the formulation of a problem on the semantic level.

What does that mean? In the period preceding what will be discussed a linguistic expression could for instance be part of a commercial transaction as in swearing an oath. Gradually the function shifted in the direction of the formulation of a problem on the level of meaning as in “what is the nature of that what is?” The difference is considerable, from an action pure en simple to a stance of pondering. The latter is not to be taken light. It is the stance omnipresent in and dominating Western thinking.

However interesting this elucidation might be, the point relevant here is that this insight - in that particular twist in the history of appreciation and understanding - allows bracketing precisely that interpretation and focus on the problem at heart of this subject. As the goal set is not gaining insight in the history of the thinking dominating the western culture, but to unveil basic principles, actions, procedures supporting the realization of the human condition, in this exposition in particular the level onto which they develop and show themselves clearly.

By this it will be clear that bracketing interpretations based on historical turns is a methodological move.

⁶ Referring to the same insight is also Watzlawick mentioning metaphysical realism in the First chapter of the invented reality, chapter one, from page 25 onwards in particular. Watzlawick, P. 1984. *The Invented Reality*. W.W. Norton and Company; and on metaphysical realism also Putnam, H. 1981. *Reason, Truth and History*. Cambridge University Press, Cambridge.

The next item will connect to evolution or rather a plausible assumption in that context. One of the insights Darwin made extremely clear is that from a phylogenetic perspective **all species are related**. The fact of having the same origin can not be neglected. The scheme of the tree of descent in his notebook shows that species develop along lines comparable to the branches making out the crown of a tree with that particularity of the closer in distance the stronger the similarities amongst the species concerned. The kinship of the human to certain great apes is often illustrated by the tiny difference in the genetic make up. In the zoo the anatomical and behavioural likeness between people and chimpanzees strikes. Much less talked about is the fact that this **similarity also covers the cognitive**. The perceptive and cognitive abilities, the strategies to cope with changes in the environment must once have been the same. This provides the steppingstone for the question on how having started on the same foot, a branch of species could have developed quite sophisticated modes of negotiation of the Umwelt.

That at the same time expresses the basic position taken in the project of research set and the question quite naturally following from it. How could an in principle apelike creature have acquired or better still realized the abilities and skills characterizing the human?

The goal and the appropriate level

That being said there is one more remark left.

This brief overview made clear that the focus is on the organism with the stress on the phenotype trying to cope – acting – with the changing conditions of the Umwelt. In a few words, it is all about action in the public arena.

According to Richard Dawkins humans are the subject of their genes. The role of it will indeed be important but the idea has always been coming as somewhat weird to me. It is as saying that when the bus on the motorway crashes into another vehicle, it is because of the behaviour of the passengers minding their own business in their seats maybe browsing a magazine or even being asleep.

Having stressed the role of the acting phenotype in the public arena, the question then follows quite naturally: what exactly is being done and to what effect or result does it lead?

The goal is to find out in how far we can go in formulating a satisfying answer without making an appeal to mysterious interventions of whatever kind. Hence extra-natural interventions will not enter the scene neither will emergent properties and abilities escaping the spout of Allahadin's' mysterious lamp do.

The effects of mutations giving rise to new forms are of course acknowledged. But in the context of this project they will however be left out.

In a nutshell:

- The phenotype having to proof viability in real life situations comes first.
- Embodiment opens at the same time determines in the sense of restrict abilities.
- History projects meaning on the input selected by embodiment.
- The fact that species are related provides a first platform in the endeavour to raise understanding.
- Knowing the history of the local culture allows avoiding biases following from it.

These points of interest serve as frame of reference for the key question in the intended research project: “what kind of in principle public observable action(s) could generate effects which play a functional role in raising abilities considered to be typical human?”

Concluding

The idea that every act of wording ends into the fabrication of a version has to be taken serious and put aside at the same time. The very act of bringing forth narratives has to be put aside, averse to any form of criticism because it concerns the very nature of being human. It is precisely what makes us human, without it we would be an animal species amongst other species, maybe a technical proficient one but still an animal species nonetheless. But it also deserves attention because awareness of the fact that all is storyline provokes the critical stance that not all versions should be taken evenly serious. This critical view requires foundation of the story presented. That is precisely what I have tried to offer in this contribution by listing the elements constituting the basic frame of reference, constituting so to speak my view on reality, my view on what constructs the perspective on the nature of organisms, the human species in particular. Decisive to me is the fact that the position built on the basis of embodiment, history and the experience of existing is the one shared with other species at least with these most akin. By this it provided the platform from where the evolution into being human could take a start. As such there is not a definite answer to which level is best reflecting reality. For one the latter qualification is a conceptual pitfall. Most important all versions being but versions, the anchor point depends on the goal set. Mine is to understand what it is to be human. That if the cosmologist boils down to understand what happened on the largest of scales. My perspective want be any use to that end. But reducing the human to the workings of particles will neither be of any use in understanding what exactly a human characterizes and how that could have come into being.

Further reading

There is a rich corpus on constructivism. As an introduction I recommend in particular:

- Watzlawick, P. (author and editor of this volume), 1984, *The invented reality*. W.W. Norton & Company.
- von Glaserfeld, E. 1994. *Key works in Radical Constructivism*. Marie Larochelle, editor. Sense Publishers.

Postscript

Working on another text where objectification is central, it became clear that the previous paragraphs offer no more than introductory considerations, a kind of polite freewheeling. Because there is only one level, “one major event” offering the steppingstone into becoming human *objectification* and that is not a matter of genetic mutation, or of happenings on a cosmological scale, neither of the quantum dynamic fluctuations of elementary particles. The decisive turning took place on the level of the living organism coping with changes in its immediate context or Umwelt. If there is a reality worth to be called that way then it took place on that particular level, constituted by these particular conditions. But again, the word reality itself should be expelled to Siberia unless used in its proper meaning as referring to the Latin “res”, referring to some item at hand or to be discussed but in no way as the ultimate guise of existence.

As a matter of fact the difficulty in shedding light on the subject of anthropogenesis finds its origin in the fact that objectification is taken to be a natural case hence any research and theorizing only starts from a level objectification lies behind.

Postscript – Staging the human perspective on “reality”

The viability of the phenotype in coping with the burdens of life, embodiment, history, time and space have been mentioned as the parameters staging the basic framework constituting the scene appreciated as reality. Observe that this level is shared with species most akin. However as soon as language becomes implemented an extra dimension no longer shared with great apes becomes active. The following pages will focus on clarifying this particular staging.

Hands

This text is an extract of an essay “Hand and imagination, manipulation of the basic dynamic underlying displacement”.

All homininea have and make use of hands that are able to grasp, hold and move whatever could be grasped, held and moved. Humans are hand centred in space⁷. The latter is not to be understood in a Euclidean⁸ or Newtonian sense but sensory and motor defined. In Euclidean sense space is a novelty only existing in the thinking brought forth by the human kind. Space on the level of experience shared with species most akin comes down to the extent the eye can catch, the reach of locomotion and of the grasping hand. So space is more a dimension of perception and of movement rather than an imaginative framework onto which orienting parameters can be set out.

The fact being equipped with hands is so trivial that it is overlooked altogether. However the importance of the logic of the hands cannot be appreciated enough. It could not have occurred in animals with hooves, wings or without limbs altogether.

The human way of negotiating the world does not come out of the blue, it is not neutral nor independent and objective. It is harnessed by the particularities of the body. The hands provide the interface where the negotiation of the environment takes place⁹. It sets and specifies the blueprint of the development at least of motor directedness, perceptual focus and cognitive patterns and strategies. In short, the importance of the type of embodiment is paramount.¹⁰

It could be noticed that the position and contribution has been observed but apart of the fact that the hands fulfil a central role in the existence of the human, is it well worth all the fuzz?

This misses the point completely.

⁷ Cfr. N.P. Holmes in Z. Radman, 2013:57-70

⁸ Wynn & Coolidge, 2016 are premature in relating spatial cognition to Euclidean spatial thinking. Because that type of understanding is only possible much later when the use of implements as secondary stimuli provoking displacement and thus projection got introduced. Silverman (1992, 2000) suggested that an Euclidean framed awareness could be based in the division of labour of hunter gatherers.

⁹ In its own context not to be confused with what is explained here. Following Anaxagoras Aristotle considered the hand the tool of tools. But he also considered the hand as the product of the intellect and not the intellect brought forth by the possession of hands (De Anima, 432a).

¹⁰ The following contrasting situation illustrates the importance. For a grazer the head is directed to the ground, the lips pulling the grass, the eyes directed sideways alert for eventual dangers. The world experienced is a conglomerate of ground directedness, grass and caution. Something similar is the case for the hominin being bipedal and provided with hands to grasp but directed in a very different sense.

Further the following are of relevance in relation to the hand as channel of approaching the world: Radman Z. (ed), 2013, The hand an organ of the mind; Napier, J. 1962, The evolution of the hand, The Scientific American; Cagli & Coraggio, 2008, What the draughtsman's hand tells the draughtsman' eye, International Journal of Pattern Recognition and Artificial Intelligence; Tocheri et al.2008, The evolutionary history of the hominin hand (...), Journal Anatomy; Marzke M.W., 1992, Evolutionary development of the human thumb, Hand Clinics; Alméjida & Sherwoord, 2017, Hands, brains and precision grips, Researchgate.

Being the actual first line interface the hand centred orientation is far reaching. It implies that all interventions onto the world are framed within the logic of the abilities of the hands in cooperation¹¹. This easily escapes us because it is our very nature, the way we approach the environment. It is like the body of water for the fish. Before being characterized as “speaking”, for anything humans are manipulating beings. The following could help. What do all living creatures have in common? Being primary motivated, i.e. maintaining life and procreation. Several groups of species however differ in the way that motivation is getting realized. They differ in the way the burdens laid upon by the particular environmental conditions are negotiated. A bird has wings and a beak. It moves by flying and feeds by using the beak¹². That is the systematic underlying its existence. That logic to use an inappropriate word is different for different types such as a predator like in the case of a tiger, a grazer like an antelope, the crocodile, the snake etc. What is that basic pattern underlying negotiating the environment for the creature which in the end will be called human? For the species most akin the hands have a twofold function. Chimps are knuckle walkers so hands are used to move around. But they are also used to hold on the branches of trees, grasp fruit or a prey, hold the offspring, in some cases even handle an action supporting implement. For what would become the human line the function of locomotion has been divorced of the function of holding and grasping. Locomotion brings where the food is, the hands specialize in handling it. This might be an all too simple illustration but it comes down to the fact that main functions such as locomotion and manipulation are getting divorced and that being the case they specialize along their track. Upright walking can be considered a specialization, the same goes for the applications of the hands. They specialize in executing interventions. In summery, they are the first line specialists in the act of negotiation. But that has a major consequence. It actually means that all further refinements, heuristics and strategies originate within that framework and cannot do anything else then follow the “logic” of it.¹³

The suggestion is that in the further development two stages can be discerned. In first instance the taking form of a perceptive configuration which will adapt to and fit the act of manipulation and secondly the use of the form given artefact as a stimulus of second order thus provoking displacements in time and space in the experience.

On closer inspection and way ahead of what has to come, how difficult is it to recognize in the act of speaking the manipulation of objects with the purpose of provoking a certain effect? Is it too bold to state that this is an example of negotiation?

¹¹ The trajectory of the human evolution is brought forth by the use of hands; it does not as a ghost out of Allahadin’s lamp emerge from the workings of the neural tissue. Compare with Trivers observing that the brain is functional in surviving not in the task of producing knowledge (2002).

¹² It is more then often said that man is special. But what to think of birds able to fly? Isn’t that not even more surprising?

¹³ The automobile whatever the actual degree of sophistication could only be developed within the logic of the abilities provided by the introduction of the wheel.

At the risk of repeating myself this pattern is so low level or first line that it goes unnoticed, moreover veiled by a historical heritage that it is all about the ultimate truth far away from the realm of vulgar manipulations.

In short whatever the semantic discourse the human enrobes his existence in, his way of behaving, his way of being in the world can from a technical point of view be understood as a form of mediated manipulation, the logic of the hands providing the overall framework.¹⁴

¹⁴ Let us burry the picture of the human provided with special seemingly esoteric "mental" gifts and try to understand behaviour as a particular motor based way of negotiating the world.

Manipulation as the basic human template for negotiation

The points of view taken in “On the proper perspective to reality” constitute the type of basic pattern in principle applicable to species akin to the human. However for the human there is an extra template which precisely will set him apart even from the species most akin. The following lines will clarify what this is about.

1. Personification

In an exposition on the effort of relating quantum mechanics to biology, expressions such as “nature does not allow this, nature avoids or favours, life is mild, large molecules require, complex cells enable, quantum fluctuations excite etc. Personification or anthropomorphising is of course nothing new. It is a ubiquitous practice present in day to day life and as the quotes illustrate also in the scientific parlance. People blame the internet for being slow, the computer of having a mind of his own, a car becoming of age. But what struck during the exposition was that the practice mentioned seemed in use to such a degree by this raising the impression that there was no alternative to that type of formulation. As such every description could be reduced to the basic pattern of some instance functioning as an actor executing some action.¹⁵ It is a remarkable observation.

2. A basic pattern

On closer inspection there is however more to it than a figurative formulation, more than an interesting anecdote. It depicts a particular scene, a particular staging.

Thinking in such terms easily suggests other ways of formulation being possible however it seems impossible to think of any alternative. It is a fact striking in its own right. I will come back on this further. Of utmost importance now is that the scene presented is quite specific: it is all about an actor performing an action, simple indeed but penetrating and omnipresent.

3. The conditions of origination

It is not a coincidence that this type of ordering attracts the attention.

I will make use of an analogy - always risky, to offer an insight in the scene I have in mind.

¹⁵ The case of a subject undergoing some action demonstrates the same structure but rephrased in a passive mode.

Think of a highly sophisticated carbon wheel of a competition bike. Think of the enormous carrying wheels of a rocket launch platform. Think even a step further of the intricate turbine wheels of a jet engine. Going back in history they all refer to a first moment in which a piece of a tree trunk for instance facilitated moving some other weighty thing around. Maybe it all took another form but the idea is clear. There is a first basic pattern still present in actual applications whatever the degree of sophistication.

In a similar way I suggested in *The Forgotten Transition* that the skill which in the end would be coined language originated in the context of an action directed on the bringing forth of a tool or making use of a tool aimed at realising some goal as in breaking the shell of a nut or slicing carrion.

That is the very first step in which (much) later the tool became associated with a secondary meaning therewith raising in the experience a displacement in time and space. This introduced a very first step on the path leading into language.

This type of representation implies that language as the end-product we are familiar with is an effect realised by some form of action.

That is the first fact to keep in mind: it originated in the context of an action and it deserves to be stressed *according to or taking over the structures of that dynamic*.

Clearly formulated, language boils down to an action with a specific effect i.e. raising displacement in the experience.¹⁶ This is a matter of technical execution, some actor has to perform some form of action – disregarded the semantic content of the product brought forth.

But further turning precisely to the content, the said displacement in the experience, it sketches out a scene in which an acting instance performs an action as in “nature organizes...; the brain orchestrates like a puppeteer...; receiving signals from the brain...”

It is not the intention to depict this as an abnormal given, only to stress the following facts

- 1) that language originated as an effect in the engagement into an action, and
- 2) what language depicts can be boiled down to the form of an action executed by some actor.

4. Focus on the second or the semantic layer / setting the stage

Previous contributions made clear that understanding the world or the so called “reality” is a matter of bringing forth a construction. The body is acknowledged as the first line filter accepting input and by this producing the world scene perceived all in function of the condition

¹⁶ Referring to other contributions such as *The grammar of action*, and *Hands and imagination*.

of the primary motivation.¹⁷ What will be discussed further concerns the second line producer only present in humans having mastered the skill of language.

This layer is dominant for the encultured human and as such frames the understanding of what is going on. If this might be difficult to grasp imagine of attending a play in the opera house. Suppose the performance is that moving that one is carried away, forgetting everything else in the whole world. The scene staged by the second layer is exactly doing that.

The difference with the opera is that alternatives are available, such as staying at home or going to a sports manifestation, visiting relatives etc. in stead of attending the play. Different contexts are within reach each offering a different framing. In the case discussed here there is no alternative imaginable, we seem to be stuck with one particular type of framing: an actor executing an action.

In hindsight the reason is obvious. The skill of language is a particular application following from a basic template, that of mediated manipulation. As mentioned the means in the earliest setting of making and using tools, got compromised by a second order meaning, i.e. a meaning acquired by association.

As displacement in the experience as the secondary effect is following from the dynamics of mediated manipulation, it has to reflect that structure and dynamic in the same sense the structure and possibility offered by the tree trunk is immanently present in the carbon wheel.

That template opens a gateway allowing to provoke an experience in the other participants, and of course the actor himself.

Following the “logic” of mediated manipulation, it also falls within the confinement and the forcing exclusive perspective of the said logic.

In concrete terms this implies that

- a) language is brought forth this way and only in this way, and
- b) the depiction has to adopt the same structure.

A linguistic formulation depicts an actor and an action in relation to an object which can be tangible in a direct way as a brick is but also can take the form of an objectified subject, a meaning as the payload of a material sound.

5. Critique from the corner of linguistics

The critique from the point of view of linguistics is predictable. Language is far more complex and according to linguistic typology different orderings are possible.

¹⁷ Referring to the final paragraph in Darwin’s “The origin...” mentioning the laws of growth and reproduction.

Concerning the first observation, in *The Forgotten Transition* a distinction has been made between the basic pattern of syntax which is universal and a layer on top of that which varies according to local custom or culture.¹⁸ The basic pattern is that of mediated manipulation mentioned above. Further the two or three elements being actor, action and eventually the target acted upon, can get organized in different ways. Some cultures respect a subject verb object ordering, others start with the object followed by the verb or the subject. There are at least eight typical orderings acknowledged. Some languages stress the role of the verb while others the role of the noun, etc. But whatever the local custom, it always concerns an ordering of the mentioned elements.

Moreover the importance of academic linguistics should not be overestimated. It is not a revelation but a human effort to apply a corpus of methods on a rather newly established subject of study taking form not earlier than 18th century. In that sense Ingold (2002) the anthropologist observes rather sharply that language taken as a mental faculty is an invention of linguists.¹⁹ In my opinion many are obsessed with the formal characteristics on the one hand, on the other misled by the hook-in point of the discovery of the neural zones named after Broca and Wernicke. Many seem to be enchanted by the tempting promises of brain as a fountain for the said ability.

6. The importance of this

Having sketched this perspective, what is the importance?

The answer is the raising of awareness for that particular form of staging. Most will accept naive realism. Perception depicts what really exists over there. A minority will acknowledge that the body determines the phenomenal scene. But once beyond that determining filter the chance is extremely slim that the basic pattern as described above will be recognized. Apart of the determination by the outcome of embodied filtering, the expectation will most probably be that constructing an understanding of what is happening is quite neutral, at least no other form of predetermination will get recognized, while that as explained is a wrong thought.

It overlooks the fact that the development into mediated manipulation has as particular structure and dynamic which reflects in the product it brings forth.

¹⁸ As a relevant example of an analysis on the local level as meant here, reference to Jackendoff, R. 1993 *Semantics and Cognition*; Cambridge. Manuel Bremer, faculty member of the Heinrich Heine University in Düsseldorf, offers an accessible explanation of it in *Jackendoff's Semantic Structures*. Despite I consider it local structure, it is of relevance because it claims that the structures discussed are innate, hence basic; also because Jackendoff criticizes classifications on the basis of truth conditions. Bremer rightly point out that the syntax discussed is that of English and not that of semantics.

¹⁹ Ingold, T. 2002. *The perception of the environment*. Routledge.

In the same sense if the particular processes described in previous contributions organize object configurations in the perception bringing forth supporting elements in actions undertaken, the applications following from that will embody the same type of elements and dynamics – the same logic so to say. It induces a setting depicting the context in which it originated. Recall the tree trunk and the turbine.

Being embedded in and absorbed by that practice it will – misleadingly – impose the idea that this very condition is transparent and neutral, that it is the natural state so to speak, Locke's blank slate from which everything else takes a – fresh - start. But as mentioned it actually is not. It is already staged or preformed by the originating conditions.

7. Concluding

Coming to life, waking up a world seems to present itself in front of us or rather vice versa we in this case humans, bring a world to appearance.

Shared with the species at least most akin this is about

- embodiment allowing perception and motor ability and reach thus opening the world as a scene;
- the condition of the primary motives determining the urge to behave,
- and further the consolidated history as the fruit of education and experience.

These are the factors bringing forth the world.

For the human there is one decisive perspective more transforming what has been brought forth by imposing an intrusive template in which an acting instance performs some action thereby making use of supporting elements. The end result is the world coming as natural to the acting perceiver.

In this part the focus got directed onto the pattern mentioned. It characterizes the world brought forth, having transformed the phenomenal into a world we have ready at hand to negotiate.

The common idea of a human, being free in any sense to give meaning and to a large degree even to determine behaviour is on the basis of what got explained a delusion with a historic background.²⁰ It is of the same order of convictions about an ideal truth or the existence of an objective world.

In more simple terms, humans think to be decoding the meaning of an already existing reality while the set up of the world appearing is brought forth by their very existence itself.

²⁰ The turbulent period of the French Revolution breaking with the feudal conditions and profiling an autonomous and integer citizen provided with a seemingly boundless free will.

Grammar of action and human cognition

The meaning of grammar of action in stone knapping for human cognition in general

Introduction

Dietrich Stout and colleagues propose a “Grammar of action in human behaviour and evolution”. (2018) The title refers to human behaviour and evolution in general, the contribution offers an analysis of the detailed manipulations applied in producing stone tools. The former promises a hint into the secrets underlying the human condition based on the rigorous analysis of observable manipulations. These are very different levels. This contribution will discuss this difference but focus on the importance of the broadest approach.

The grammar of action

“For more than 60 years, the serial ordering of behaviour has been a core topic for the cognitive and behavioural sciences. Enhanced capacities for complex action sequencing support distinctive human behaviours such as language, imitation and tool-use, and are fundamental to the flexibility that is a hallmark of human intelligence. It has been suggested that this implies a unitary evolutionary and neural foundation for human cognitive uniqueness across domains but this remains controversial. Although modelling suggests computational similarities across behaviours ranging from foraging to language-learning empirical investigation has been limited by a lack of objective, generalizable methods for describing, quantifying, and comparing the sequential structure of diverse, real-world behaviours. In Palaeolithic archaeology, for example, investigation of long-standing hypotheses about the evolutionary relationships between tool-making, language, and cognition have been hampered by the lack of an objective metric for the behavioural complexity of different ancient technologies. Here we adopt a data-driven computational approach to this challenge by using grammatical pattern recognition algorithms to measure the structural complexity of behavioural sequences from modern tool-making replication experiments – effectively extracting action grammars for critical survival skills from the human evolutionary past.”

This rather long extract catches the core of the set up of the research.

What are the conclusions?

Different techniques such as Hidden Markov Systems, K-Sequitur and the occurrence of Shannon’s entropy allow a detailed and quantified description. It showed that in the production of an Acheul type handaxe two levels of complexity occur while Oldowan type only one. It might provoke the impression that as a critical reader I have been all too short-sighted but this is actually the core of what is getting concluded in the article however with far more detail in the domain of statistics and of neural investigation.

Apart of the fact that this conclusion seems rather trivial, however confirmed in a rigorous way what actually is in the open for all to see, there is something else feeling odd.

The introduction silently promises a glimpse on some deus ex machina fundamental for human way of rendering intelligence. But the research discussed is focussed on a quantitative description based on analyse in which statistics play an important role.

Should it rather not be one or the other, either a broad perspective or a restricted window on a particular type of action? What can the latter add to an insight on the former? What does an increase in complexity in serialisation tell about the type of knowledge characteristic for the human?

But there is yet something else feeding dissatisfaction on my part. The following analogy will help to understand.

On the scene appears the usual visitor from Mars ignorant about human behaviour. The creature will be confronted with humans playing a game of chess.

There are two possible starting positions.

1. or the Martian will be left completely uninformed while he has to find out what the scene in front of him is all about;
2. or he will receive some introduction on the goal of the game and the name of the pieces and provided with this basic information he has to find out the particular moves and the general tactics.

In the first position the visitor is completely ignorant, in the second he has knowledge of the concepts and possible operations.

Extrapolated to the actual situation the first position can eventually provide an overall view on the character of human cognition, while in the second the Martian equipped with basic information is already getting launched in a particular direction. That could be helpful but at the same time also blinding. The concepts offered in advance force the understanding in a particular direction. In virgin scrubland any direction is possible but if there are remnants of an existing path the direction is implicitly signified. The allegation is that the choice of investigating the operations concerned in fashioning a nodule into a tool already installs a particular framework guiding into a possible understanding.

This critical remark begs the question what kind of approach would be more appropriate for unveiling the cognitive particularity of the human?

The basic pattern

An analysis and description as offered by Stout et al. is all too strong focussed on sub-operations. A step back widening the perspective is required.

The very first question to ask is about the basic aim of an organism. Aim not to be understood as the achievement of a certain goal in a far future but rather as what is the sense of existence while sense is rather synonymous with life itself. What is the basic drive, what is the most fundamental motivation of any organism? Darwin in the last paragraph of "The origins of species" refers to growth and reproduction. Indeed any form of behaviour of an animal can be

understood as the fulfilment of these fundamental motives: acquiring food in order to sustain life, looking for a mate to reproduce and taking action to avoid a harmful confrontation. As such the existence can be understood as a never ending endeavour to regulate the primary motivated tension in relation to turbulences occurring in the immediate environment. This type of behaviour has by Watzlawick et al. (1967) appropriately been coined relation regulatory. Further, how an organism experiences the world, what type of world it seems to have has been referred to as world one in "The Forgotten Transition". And on the level of understanding Pamela Lyon, Fred Keijzer and Van Duijn refer to a minimal form of cognition.

This in a few words the basic condition shared by all organisms.

The primary motivation provides direction to all what is alive. This is concretized by all means the body provides. For some creatures the whole of the body is involved like with a constrictor, some have special parts like the muzzle of a grazer or a bird using beak and claw, or the front limbs like bears or even better apes and monkeys. As such the first regularity, the first pattern is this fundamental drive incarnated by the form and the capabilities of the body.

The second pattern

Of course we are most interested in the comportment of the species most akin. They move around on all fours, knuckle walking. The back is in a diagonal position forcing the gaze to a nearby zone on the floor. The hands skilled in grasping tree branches are also suitable for grabbing food and holding infants. Some species use stone tools, like in the case of an anvil and hammer to open nutshells. This already shows a particular structure by different operations being executed in a particular sequence, serial ordering is already present. It is a matter of fact inherent to the way the apes are built. Further observation shows that tools are not transported over long distances and that the use remains restricted to a particular situation. All this underpins the idea of incorporation, the implement becoming part of the bodily engagement.

But despite these limitations the use of an implement already provides some advantage. In first instance it protects the skin of the palm and secondly the hammer nodule augments the mass and by this the striking force. Furthermore throwing stones or holding off a danger using a stick increases the range in space, the same for using a twig as an ant fishing rod. It also increases the type of food as in the example of the nuts.

Being bound to the actual and the local, a direct entanglement in what is happening (not able to reflect on a given problem), incorporation of action supporting means, these are features characteristic for this phase of development. The abilities find some extension but the fundamental dynamic and organization of behaviour remains the same.

Change as third pattern

So far not one single species shows a spectacular qualitative leap.

Big cats still kill the way they did; grazing animals continue their activity as always and so on. Only those branches of species which in the end will bring forth the human testify of a particular evolutionary parcours. The last common ancestor lived in the canopy and spent also time on the

forest floor. Doing that he made use of all fours, the front limbs in a knuckle walking position, the wrist locked to provide the strength needed. Some groups remained longer on the bottom and gradually developed a bipedal posture and gait. The front limbs lost the supporting function but they were nevertheless already skilled in other functions. The hands for instance were proficient in grasping fruit and holding an infant and some apes were even skilled in the manipulation of action supporting implements. These skills “suddenly” found themselves in an open space. Exploring and exploiting the mentioned skills further seems a natural development. Anyway whatever the speculation on this matter, the tools unearthed by anthropologists testify of an improvement. But all in all this development shows improvement in the sense of becoming better in practice but it does not show yet a radical change. A chimpanzee breaking the shell of a nut with a hammer and anvil is already remarkable but this did not open the gateway into a complete new way of negotiating the Umwelt.

Taking the contemporary cognitive capabilities of the human into account there must have been something else going on.

The stone tools found provide actually hard evidence for radical changes. Take the Acheul hand axe. The character of older tools of the Lomekwi and Oldowan type can be discussed, but the apparent standardized teardrop form of an Acheul no longer.

What has changed and must have been changing with it?

As mentioned the introduction of an erect posture is not only related to the way of locomotion. It also has other effects such as changing the visual perspective. The visual stage changed from a nearby frontal segment mainly focussed on the forest floor into a wider, horizontal field. Freed of locomotion supporting functions, the intensified manipulations of the hand attracted the focus which in itself already had been reoriented. All this is not to understand in a teleological way, in the sense of “it needed to go into that direction of development in order to”. It rather should be taken in the sense that the circumstances became of that nature that they invited or provoked this development. It could be said that the situation in a sense became affordant - all circumstances were such that it had to happen – as an effect and not as a goal.

Observe that in this approach the impact of the manipulation of the hands is leading, at least playing a role of equal importance with the visual. Today we are all too inclined to think of looking first and then acting in according to what has been observed. But the reaching out and grasping is at least as important if not more.[\[2\]](#)

As a note in the margin, stressing the importance of the motor dimension is justified but actually here we are trapped in a typical Western analytic way of thinking and modelling. Things are taken apart so that they fit into a mechanistic scheme of cause and effect. Useful for computation and estimation indeed, but on the level of biology and ecology would it not be more a case of one engaged movement of which both are dimensions and not separable parts existing independent?

Picking up where we left, the intensification of the circular action between the motor and the visual – the focus on the hands, will over time[\[3\]](#) result in an increasing attention for particular features in turn changing the perceptive cognitive organisation of input. The following analogy is not exactly what is meant but it provides a hint.

Take a Westerner who never left his village suddenly finding himself in a Chinese environment. He is familiar with the type of writing based on the Arabic alphabet but what he now finds represents to him no more than a mess of thin lines and dashes absolutely devoid of meaning. After a while he is getting used to some of the ideograms, becoming able to decipher particular patterns and attaching meaning to it. In the end he will become able to read the meaning in a direct manner that is, without the need to study the particular ordering of the signs. He will "see" the meaning.

It makes clear the trivial fact that meaning is not embedded in the sign itself. That is what it is: a configuration of dashes and lines. What changed is the process of interpretation applied by the visitor.

As said, this analogy is faulty because in a phylogenetic perspective the implements manipulated by the hands are not understood as meanings as in the case of the ideograms. The case here is that "the eye" becomes ever more sensitive for certain formal characteristics favourable in relation to the use of the implement. In the case of the ideograms the relation took place between eye and meaning, here the relation is about eye and use. This of course also bears a kind of meaning, but the stress here is not on that but on the formal characteristics. That is the form of the implement, the mass, the handiness, the affordance all in relation to a particular use such as carving or scraping.

What exactly is changing in the act of looking?

The implement is slowly getting separated from its character of being incorporated. It gradually becomes something standing in its own right. It becomes a particular type of configuration taking the foreground. It becomes a form in isolation which can be recognized not in the sense of fulfilling a certain described criterion but as something fitting the hand, almost asking to be taken by the hand in order to execute this or that action. It has a circular character: looking out for discriminates favourable characteristics as in the case of a sculptor chipping of and neglecting material which is of no use, and conversely the remaining form sucks up the focus and sharpens the attention precisely for the characteristics of relevance. In anticipation: the Umwelt will increasingly become understood in function of the manipulability, it will become a set of manipulable entities. This is a very different perspective in contrast to a phenomenal scene purely defined by the condition of the primary motives. As such it signifies a first moment of radical difference.

Two issues are of importance.

What has been described is happening in a context of manipulation in the broad but also in narrow sense, negotiation on the one hand, the concrete operations executed by the hands on the other. In all this the logic of manual operations in which an implement is involved, is the defining pattern and always present. This goes against the silent and commonly shared opinion that the human from out a sphere of free floating freedom as a neutral frame of reference decides on what action to take. But as made clear this area is not neutral at all. Basically there is the primary motivation determining the very first meaning of what is happening from which mediated negotiation is geared up. So there is already meaning and a particular mode of operation as the very first basis.

Secondly a recalibration of the visual activity is taking place in particular the way the immediate environment is getting organized into a meaningful scene. Driven by the primary motivation the eye increasingly is becoming focussed on the perception of features with the character related to manipulation such as form, handiness, efficacy and the like.

All these elements contribute to an increasing specialisation of the negotiation of the Umwelt even a moment of radical difference. However taking the contemporary abilities of the human into account the conclusion remains that this – despite the mentioned difference – does not suffice to obtain the level of cognitive capabilities the actual human demonstrates.

Stage four: taking off to another level altogether

The intertwinement of hand and eye resulted in a reconfiguration of the input provided by the environment. The meaning of the action supporting implement was bound to the use of it in an overall scheme of primary motivation. Here meaning is direct. The meaning of a hammer stone is crushing coverings making the nutritious content available.

Incidentally it might also have been used in killing a predator. This event enrobes the tool with a second meaning. The fact that a tool no longer is embedded in incorporation but appreciated as clearly demarcated and isolated from other specimen equally discernable, provides the readiness required to serve as a stimulus of second order. As such all is in place for the presentation of a tool having killed an enemy to provoke in the experience of a witness of the original scene, a reminiscence of that dreadful event. The tool acquired the function of a substituting stimulus.

Two issues are of importance.

First of all, that by manipulation of some entity one becomes able to provoke an experience. The type of experience is not special as there is a lot around that is meaningful and by this provoking experience. It becomes spectacular by the fact that the action is self initiated. Once experienced as a possibility then it acquires the character of an unexpected reward which in turn requires repetition and reaffirmation. Observe that reflection is not required. It is a process which could be described in behaviourist terms, operations driven by rewards. But of more importance is that it fires up a tendency today coined as intention. This is a new condition whereby experiences are not exclusively fired up by external factors, but also can be brought to life by a self intended action. In combination with the content of the effect, that is making reference to something which is not actually present, it frees from being bound to the situation locally at hand. Displacement in space and time – always in the realm of experience – becomes an accessible practice[4]. It will in the end lead into the ability to build models and plan future actions in the imagination[5].

There is more.

The process of objectification, hand and eye discerning particular patterns, implies already a taking of distance. One has to step back to better see what is in front of him (con-fronting him) in order to improve the form of what will become the tool. Add the ability to bring forth imaginative content of something or event not actual present by this transcending the condition of being bound. The initiator enters the experience of being disconnected. He is no longer

instantiating the centre of the event, he becomes decentred, excentric as Plessner calls it. He finds himself positioned on the sideline. He becomes a perpetual observer. It even takes a bizarre form when in imagination fired up by making use of external cues, he provokes an image of himself or of a feature of himself or of an event in which he got involved. At this point reflection understood as considering upon, becomes reflexion or considering upon oneself. It is bizarre indeed because the organism manifestly being one and in principle undividable seems to break up in an active observer and a passive observed installing a feeling of distance which actually is not present. It is a certain perspective, an appreciation which Sartre strikingly coins as “cette distance nulle”, the distance which is (getting experienced but) not actually occurring. The ability to realize a displacement in time and space, if only in imagination opens a plethora of new applications, a complete new order of interventions onto the world which on top of that suddenly increased in scale in an exponential way. At this point the human species realizes types of negotiation leaving all other species far behind.

Summarizing

1. At first the behaviour of the hominin line which is of interest in this discussion provides no indication yet of a cognitive condition differing from other species.
2. Taking an erect posture and a bipedal gate provides the onset for a new perspective on the environment. It frees the hands from a supporting function in the locomotion and by this opens the ability to improve skills already present. But again this second stage does not show a qualitative rupture[\[6\]](#).
3. In the third phase a circular dynamic of hand and eye results in a reinterpretation of the environment. A shift occurs from a purely primary motivated perception in the direction of an increasing attention for action supporting implements in first instance in the form of particular and concrete instruments, later a reinterpretation of everything perceivable in function of manipulation and in the end as a general perceptive cognitive pattern or a concept which is getting imposed. At this point a clear difference becomes apparent and this provides the first moment in which a radical change shows.
4. Association provides the instrument with a secondary meaning. It opens for the actor the ability to initiate and apply to himself experiences with a content of imaginative nature. Manipulation of the implement results into manipulation of the mentioned content. With this the capabilities of the species take a step of exponential magnitude. The cognitive abilities of the species most akin are left behind in a definite way.

This might introduce the idea of a world fully transparent and open for all possible interventions. However all this is unavoidably based on the scheme of action in which tangible means are involved.

Reducing the previous to the core of what rightfully might be considered the revolution:

1. The introduction of the object as perceptive cognitive concept rising from and always embedded in the context of mediated manipulation.

2. Given the circumstances inevitably it had to be followed by the ability to initiate displacement in the imagination opening the floodgates to new possibilities and a new be it imaginative realm of experience.

Remarkably the human experiences a gap, an abyss even in relation to other organisms. However, biologically man is not radically different from the last common ancestors. Leaky's quote that man is the fifth ape – doing things differently might be taken literally.

Rounding up, the article discussed refers to a grammar of action to be understood as a series of discrete operations when stone knapping but it also promised to relate this to general intelligence, in short a bottom-up approach. It did not meet that end.

The alternative presented addressed the problem the other way around. The attention got focussed on a larger level incorporating the fashioning of nodules into stone tools without an analysis of the operations in detail, a top down approach.^[7]

Notes

[1] Stout, D., Chaminade, T., Thomik, A., Apel, J. Faisal, A. 2018. Grammars of action in human behavior and evolution. BioRxiv, preprint. Doi: <http://dx.doi.org/10.1101/281543>.

[2] The research into the workings of mirror neurons support this approach.

[3] The enormous window of time has to be considered. Between Lomekwi and Oldowan there is about 700.000 years, between Oldowan and Acheul from 800.000 to 1.000.000 years. So the development sketched out here spreads over many generations.

[4] This has been discussed broadly in other texts such as in "The Forgotten Transition" (2018)

[5] For this subject Lakoff and Johnson, different publications on the use of metaphor and projection in general.

[6] For some detail, Shumaker et al. (2011) point out that chimpanzees and bonobos do not introduce tools to make tools, they do not make tools in a cooperative setting, they do not bring forth complex tools and the power is provided by the energy of the animal and by the mass of the implement.

[7] In accordance to academic practice, I could have added footnotes in abundance. I preferred not to do so and only to introduce a note when it enriched the information offered.

Concluding note on the tendency to anthropomorphize

I have been reading very informative pages by Mark Moore about “Grammars of action’ and stone flaking design space”, a chapter in “Stone tools and the evolution of human knowledge” (2010, Nowell & Davidson, eds. University Press of Colorado).

But at the same time there was something rubbing me the wrong way.

The following pictures the style questioned.

Moore wants to focus on grammars of action and like Greenfield will in first instance look at lower order organisations underpinning higher levels of abstraction. Doing so he reacts to what he calls a consensus in the theoretical literature to consider lower order organization of stone working gestures of little analytical interest.

It feels like the right angle, starting with elementary actions working the way up to levels of abstraction. But it provoked the following analogy in my mind. Suppose one is pondering on the construction of an engine while all parts are individually laid out in front. They are ready at hand and the question now is how to assemble these into a working engine. That is similar to the approach taken by Moore.

But I wonder if we want to fathom how the human acquired the characteristics setting him apart, if that is the right question?

Do we want to know how from the most simple of actions the hominin on his way to become a human realised a more complex form of stone tool(making)? That is no doubt an interesting question but not what I actually am anxious to know and I assume many others with me. What I really am interested in is how a hominin, an ape like animal got into developing sophistication in an already present skill of applying stone tools. More precisely how a creature in an animal condition of perceiving and negotiating the environment ended up in a very different mode of doing that.

It seems to me that the perspective taken by Moore and the other authors mentioned in his contribution testify of a bias of anthropomorphizing. The reference made stipulates “is of little analytical interest” (2010:18). Analysis is going back to the ancient Greek ‘*analuein*’ referring to make loose into different parts. The way of approaching the world as a set of discrete units is *already* a typical human perspective. Applied on the statement mentioned it refers to studying the transition of a simple set of units and actions on these units to a more complex level of part assemblies and actions needed to accompany that shift. The focus remains bounded within the

borders of a human approach while the interesting question as mentioned focuses on how an animal way of doing things could transform into what is clearly a different human way.

It makes me wonder when we actually are going to take for serious the fact that humans are animals starting their particular and most extra ordinary journey into becoming human from the level of animal perception, cognition and motor activities. The conclusion is obvious. We have to pay full attention to the way animals most akin are having their world and cope with it, not on how one level of already human action might have been evolving into a more sophisticated level. That is of course interesting in its own way but has little to do with the question at the core of anthropogenesis.

On the narrative layer

The goal of this contribution was to demonstrate how the world or as experienced is getting structured and provided with a certain logic or system. It unfolded the coming into being of the scene seemingly appearing but actually being constructed. The focus was in particular directed onto the template of mediated manipulation underlying all further development in grasping the meaning of what is going on in the field of appearance. This should actually be the end of this exposition.

However for the sake of completeness a few lines will be added on a further effect of that scheme, but again only in subordinate importance in this explanation.

The template of mediated manipulation gave rise to a displacement in time and space in the experience by this laying the basis for narratives. To provide some clarification an extract from *The Forgotten Transition* will be added as. The narratives reframe the above embodied understanding of the world in a particular way only occurring in the human species. As such the combination of template and narration constitute the human condition.

Building narratives (extract from *The Forgotten transition*)

The structure of (1) self-initiated (2) mediated manipulation gives rise to (3) imaginative displacement. That driving dynamic, in particular the object in its function as substitutive stimulus combined with the ability of making a choice, can not be valued highly enough.

From that point on the experience of the world is no longer something that merely happens to man. In the new situation he is able to bring experience into play by organizing material means by this provoking states of arousal related to events characterized by displacement in space and time.

MacWhinney raises a similar idea (in Givon and Mall, 2002:239). It involves the shift from direct perception and action to stored mental representations of perceptions and actions. (MacWhinney ;1999a) An imaginative dimension gets - as an extra - added to the immediate bound experience. MacWhinney comments "This is the first step in what I call the 'ungrounding' of cognition."

Provoking self-induced imaginative displacement - and it should be stressed as a by-product of the manipulation of tools, realizes a shift in the development of a different order. It is no less than the stepping stone to what can be appreciated as the typical human culture, i.e. this mode in which imagination performs a pivotal role. It is not only the stepping stone but also the rupture in relation to the type of cognitive abilities characterizing other animals, however close anatomically and genetically they may be. The perceptual and cognitive world of the human becomes very different.

But the magic of this type of experience based on displacement reaches further still. The manipulable object in its function as a substitutive stimulus can become associated to the properties of the manipulating human himself such as speed, force, success during hunting or

in defending the group against a threat... This implies that the manipulation of the object in question can provoke a particular state (arousal, intention, directionality...) related to events which took place at a moment in the past located somewhere else. So he can provoke displacements mirroring properties of him-self or of events which constitute his history of life, in short properties characterizing his self-image and -history²¹. This comes down to narration²², narration of the self as a special case."

In short, the human becomes able to provoke imaginative content in the experience. But this product is not presented as something in isolation, as something completely set apart. It flows together with the outcome of direct perception as such presenting one stream of experience. In the experience it does not make a radical difference. Being present in the office – a tangible fact, and consulting the agenda for meetings to come – an imaginative content, both form one stream in the experience. No one will comment that the meetings planned are not real. Not being different concerns the level of appreciation. Everyone will agree that there is a difference in quality. Thinking of a lemon and taking a bite in the real fruit makes a remarkable difference. But while everyone will be aware that the lemon in the imagination is indeed no more than an imagined unit and as an imagination not rich in quality, no one will doubt about the reality of the fruit referred to.

In the day-to-day flow of experience it makes no difference and by this it extends the world with a complete new realm. The cow does not ponder the problem where to graze tomorrow, the experience being closed, bound to the actual and the local. The human can freely consider different opportunities. He is able to decide and initiate to think about happenings to come, recall events from the past. That signifies beyond any doubt enrichment. It has also a flipside, which might even be considered a downside. It is that mode or condition coined by MacWhinney as becoming "ungrounded".

Other contributions on narration

Storytelling, setting the human apart; chapter 21 in *The 5th Ape*.

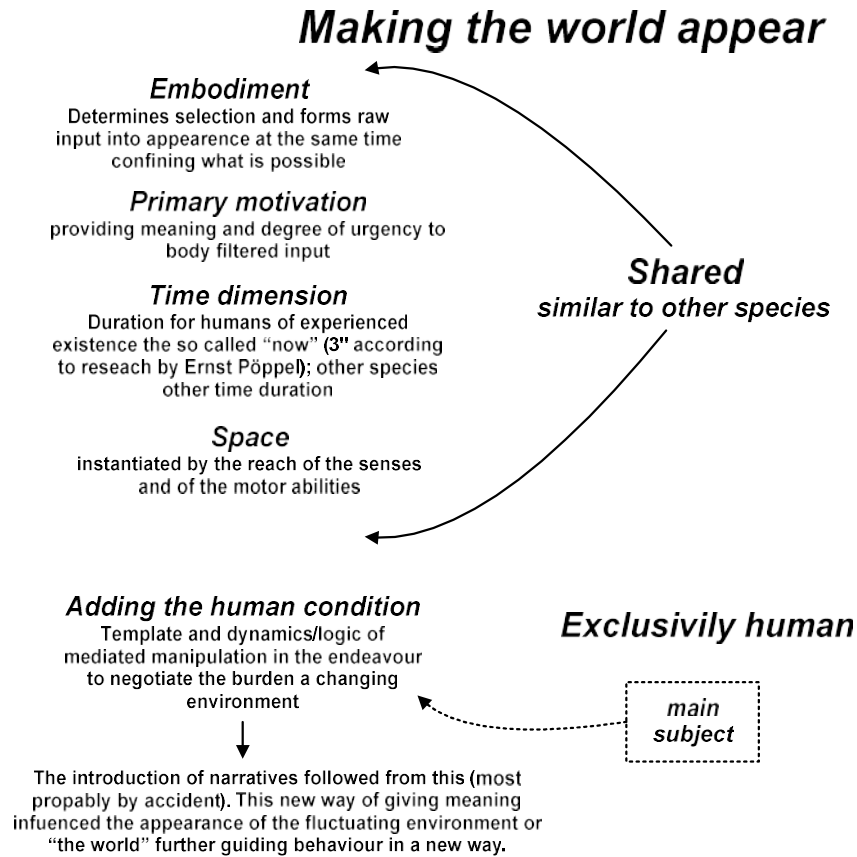
Archimedes and the palace of mirrors; *The 5th Ape*.

Pragmatic phenomenalism in The mind product of education, exercise in phenomenalism / in bundle *Unveiling the mind*.

²¹ "Quaestio mihi factus sum" in Augustine's *Confessiones* (X, 33, 50), meaning "I have become a question to myself", illustrates very strikingly the act in which the manipulator objectified himself.

²² For an explanation of the features of narrativity see Bruner (1990); in this context see also Dennett's "The self as centre of narrative gravity" (1992). For the development of narrativity as the substrate, even cause of the complexity of a full blown language, reference can be made to Barnard (2013).

Synopsis



Supporting views on cognition

Context
(as in the ground supporting the walker becoming a path)

Embedded:
cognitive systems are situated interacting with the physical and social context

Extended:
cues activating potential knowledge/reminiscence present in the environment / akin to embedded

Enactive:
organism and direct environment constitute one dynamic system with reciprocal impact